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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/614,115	07/03/2003	Vladimir Baranov	079012-0102	7685

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EXAMINER	
COOK, LISA V	

ART UNIT	PAPER NUMBER
1641	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/614,115	BARANOV ET AL.	
	Examiner	Art Unit	
	LISA V. COOK	1641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 February 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14,20-27 and 29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14,20-27 and 29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *2/5/09*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/5/09 has been entered.

Amendment Entry

2. Applicants response to the Final Office Action mailed 06 August 2008 is acknowledged (paper filed 2/5/09). In the amendment filed therein claims 1, 3, and 29 were modified. Claims 15-19, 28, and 30-36 have been canceled. Currently claims 1-14, 20-27 and 29 are pending and under consideration.

Information Disclosure Statement

3. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the examiner on form PTO-892 or applicant on PTO-1449 has cited the references they have not been considered.

4. The information disclosure statement filed 2/5/09 has been considered as to the merits before First Action.

5. Rejections and/or objections not reiterated herein have been withdrawn.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negative by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

I. Claims 1-5, 20-21 and 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cais (US Patent #4,205,952) in view of Shan et al. (PNAS, March 14, 2000, Vol.97, No.6, pages 2445-2449).

Cais discloses a method and reagents for tagging biologically active material (column 7 lines 9-42) with metals (tag/label/transition elements).

The metals include manganese (atomic number 25), silver (atomic number 47), gold (atomic number 79), Cobalt (atomic number 27), iron (atomic number 26), and nickel (atomic number 28). See Table 1. Accordingly the patent to Cais reads on Applicants claims regarding a transition element having an atomic number of 21-29, 39-47, 57-79 or 89. (See specification page 28 section 0122).

The metal (tag/label) is conjugated to the biologically active material (i.e. hapten or ligand) by an unnatural bound or covalent (chemical) bound. This reads on Applicant's claims regarding the direct tagging of a biological material. See column 8 line 36 through column 9 line 21 and column 10 lines 56-66. The metal or metal atoms can include linker moieties which facilitate specific binding (linker moiety). See column 9 lines 7-21.Competition formats are disclosed. See column 4.

The tagged biological active material (labeling substance and binding component) are mixed with a sample (ligand) to form a tagged complex. The bound complexes are separated from unbound material. Either the bound or unbound aliquot is measured for the metal content. Column 3 lines 5-22. The metal can be measured via a variety of detection systems including emission spectrophotometer. See column 6 lines 29-42.

Cais also teaches the detection/utility of any transition element/metal in specific binding assays and test pack kits (Applicant's kits with packaging means). See column 11 lines 45-66.

It is also worth noting that the printed matter on instructions merely teaches the use of an existing product, and thus cannot impart patentability. See *In re Ngai*, 5/13/04, Michel, Gajarsa, Linn, per curiam. In other words the printed matter on the instructions in a kit cannot serve to define the kit over the prior art. See *In re Gulack,* 217 USPQ (CAFC 1983).

With respect to the transition element or metal being positively charged or adapted to posses a positive charge, it is noted that Cais (US Patent #4,205,952) in view of Shan et al. (PNAS, March 14, 2000, Vol.97, No.6, pages 2445-2449) disclose the same transition metals as the ones claimed and mass spectrometry the detection procedure. Absent evidence to the contrary, they necessarily teach the positive charged characteristic.

Although Cais teaches the metal transition elements may be any metal element or combination of metal elements, Cais is silent with respect to isotopes. See column 11 lines 15-30. However, metal elements are known to exits as isotopes and be utilized to tag biological molecules. This limitation is taught by Shan et al.

Specifically, Shan et al. teach isotope labeling in immunoassays. The advantage of isotopic labeling is the incorporation into analytes without altering the structure or reactivity. These long-life isotopes can be utilized as labels and detected by an accelerator mass spectrometer. See abstract. Shan et al. teach that isotope-labeled immunoassays will allow for ultra sensitive assay that will obtain a better understanding of antibody properties. See page 2445, 2nd column 2nd paragraph.

In addition the use of these isotopes eliminates radiation and radioactive waste in biological assays. See page 2449.

It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to utilize isotopes as taught by Shan et al. in the assay method/reagents of Cais (US Patent #4,205,952) because Shan et al. taught that isotopic labeling can be incorporation into analytes without altering the structure or reactivity. See abstract. Further isotope-labeled immunoassays will allow for ultra sensitive assay that will obtain a better understanding of antibody properties. See Shan et al. page 2445, 2nd column 2nd paragraph.

One of ordinary skill in the art would have been motivated to utilize isotope labels because these isotopes eliminate radiation and radioactive waste in biological assays. See Shan et al. page 2449.

II. Claims 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cais (US Patent #4,205,952) in view of Shan et al. (PNAS, March 14, 2000, Vol.97, No.6, pages 2445-2449) and further in view of Maggio (Immunoenzyme technique I, CRC press © 1980, pages 186-187).

Please see Cais (US Patent #4,205,952) in view of Shan et al. (PNAS, March 14, 2000, Vol.97, No.6, pages 2445-2449) as set forth above.

Cais (US Patent #4,205,952) in view of Shan et al. (PNAS, March 14, 2000, Vol.97, No.6, pages 2445-2449) differs from the instant invention in not specifically teaching reagent immobilization (bound to solid support).

However, Maggio disclose enzyme immunoassays wherein either the antigen or antibody is immobilized onto a solid phase. The solid phase can be particles, cellulose, polyacrylamide, agarose, discs, tubes, beads, or micro plates (micro titer plates). See page 186. The reagents can be bound to the solid support by covalent linkage or passive adsorption (non-covalent means). See page 187 1st paragraph. Maggio taught that solid supports such as test strips "are very convenient to wash thereby reducing labor in assay procedures". Page 186, last line.

It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to immobilize assay reagents on solid support surfaces as taught by Maggio in the assay method/reagents of Cais (US Patent #4,205,952) in view of Shan et al. (PNAS, March 14, 2000, Vol.97, No.6, pages 2445-2449) because Maggio taught that reagent immobilized solid supports "are very convenient to wash thereby reducing labor in assay procedures". Page 186, last line.

Absent evidence to the contrary the immobilization of reagents is deemed an obvious modification of Cais (US Patent #4,205,952) in view of Shan et al. (PNAS, March 14, 2000, Vol.97, No.6, pages 2445-2449).

III. Claims 10-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cais (US Patent #4,205,952) in view of Shan et al. (PNAS, March 14, 2000, Vol.97, No.6, pages 2445-2449) and further in view of Foster et al. (US Patent #4,444,879).

Please see Cais (US Patent #4,205,952) in view of Shan et al. (PNAS, March 14, 2000, Vol.97, No.6, pages 2445-2449) as set forth above.

Cais (US Patent #4,205,952) in view of Shan et al. (PNAS, March 14, 2000, Vol.97, No.6, pages 2445-2449) does not specifically teach kit configurations including standards and buffers. However, kits with standards and buffers are well known embodiments for assay reagents.

Foster et al. (U.S. Patent #4,444,879) describe one example. In their patent kits including the reactant reagents, a microplate, positive controls, negative controls, standards, various buffers, and instructions are taught. The reagents are compartmentalized or packaged separately for utility. See figure 6, and column 15, lines 10-34.

It would have been prima facie obvious to one of ordinary skill in the art at the time of applicant's invention to take the detection assay reagent kits taught by Cais (US Patent #4,205,952) in view of Shan et al. (PNAS, March 14, 2000, Vol.97, No.6, pages 2445-2449) and format them into a kits including standards and buffers because Foster et al. taught that it is convenient to do so and one can enhance sensitivity of a method by providing reagents as a kit.

Further, the reagents in a kit are available in pre-measured amounts, which eliminate the variability that can occur when performing the assay. Kits are also economically beneficial in reagent distribution.

IV. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cais (US Patent #4,205,952) in view of Shan et al. (PNAS, March 14, 2000, Vol.97, No.6, pages 2445-2449) and further in view of Neilsen et al. (Spectrochimica Acta Part B, 53, 1998, 339-345).

Please see Cais (US Patent #4,205,952) in view of Shan et al. (PNAS, March 14, 2000, Vol.97, No.6, pages 2445-2449) as set forth above.

Cais (US Patent #4,205,952) in view of Shan et al. (PNAS, March 14, 2000, Vol.97, No.6, pages 2445-2449) differ from the instant invention in not teaching reagents for analyses related to laser ablation inductively coupled plasma-mass spectrometry and *gel electrophoresis*.

However, a procedure and reagents useful in inductively coupled plasma-mass spectrometry and further comprising electrophoresis is taught by Neilsen et al. Neilsen et al. employed both immunoelectrophoresis and laser ablation inductively coupled plasma (ICP)- mass spectrometry for the identification and quantification of metal binding proteins in blood serum.

Human serum was enriched with commercially available Co (Cobalt-supplied by Merck) was subjected to electrophoresis and the agarose gels corresponding to the 1st and 2nd dimensions were interrogated and analyzed using a Nd Yag laser (1064 nm) interfaced to ICP-mass spectrometry. See abstract, page 341 – 2.2.

Neilsen et al. taught that electrophoresis is a powerful separation procedure (page 340, 1st column, 2nd paragraph) and laser ablation is a versatile solid sampling tool in ICP-spectrometry (page 340, 1st column, 3rd paragraph).

The combination provided a novel route for studying metal protein distribution in serum (peak response was linear with concentration and the method showed precise replication (6% RSD), with a detection limit of 0.29ng. See abstract and page 345 Conclusion.

With respect to the transition element or metal being positively charged or adapted to posses a positive charge, it is noted that Cais (US Patent #4,205,952) in view of Shan et al. (PNAS, March 14, 2000, Vol.97, No.6, pages 2445-2449) disclose the same transition metals as the ones claimed and Neilsen teaches the detection procedures as claimed. Absent evidence to the contrary, they necessarily teach the positive charged characteristic.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to measure transition elements (tags) linked to antibodies in the laser ablation inductively coupled plasma-mass spectrometry in combination with gel electrophoresis as taught by Neilsen et al. in the method/reagents because Neilsen et al. taught that the electrophoresis is a powerful separation procedure (page 340, 1st column, 2nd paragraph) and laser ablation is a versatile solid sampling tool in ICP-spectrometry (page 340, 1st column, 3rd paragraph).

The combination provided a novel route for studying metal protein distribution in serum (peak response was linear with concentration and the method showed precise replication (6% RSD), with a detection limit of 0.29ng. See abstract and page 345 Conclusion.

One having ordinary skill in the art would have been motivated to do this to acquire the enhanced sensitivity, wherein accurate and precise detection is rapidly available.

V. Claims 22 and 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cais (US Patent #4,205,952) in view of Shan et al. (PNAS, March 14, 2000, Vol.97, No.6, pages 2445-2449) and further in view of Crooke (WO 99/451450).

Please see Cais (US Patent #4,205,952) in view of Shan et al. (PNAS, March 14, 2000, Vol.97, No.6, pages 2445-2449) as set forth above.

Cais (US Patent #4,205,952) in view of Shan et al. (PNAS, March 14, 2000, Vol.97, No.6, pages 2445-2449) differs from the instant invention in not specifically teaching methods/reagents utilizing a plurality of tagged transition elements linked to a plurality of biologically active.

These limitations are taught in the methods/reagents of Crooke et al. Crooke et al. are drawn to mass spectrometric methods for biomolecular screening. See abstract. The method provides for screening ligand or combinatorial libraries of compounds against one or more than one biological target molecules. See abstract.

In other words the methods provide for the determining the interaction between one and a plurality of molecular species. See page 1, especially lines 17-19. In one embodiment different molecular weigh tags (distinguishable element tags) are utilized to detect different nucleic acid targets (biologically active materials). See page 10, line 19 for example.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to measure a plurality of biologically active materials bound to transition elements (tags) as taught by Crooke et al. in the method/reagents of Cais (US Patent #4,205,952) in view of Shan et al. (PNAS, March 14, 2000, Vol.97, No.6, pages 2445-2449), because Crooke et al. taught that his method significantly accelerated screening efforts because multiple targets could be screened simultaneously against large numbers of compounds. See page 10 line 25-27. This would reduce processing time, allowing for more data on various compounds simultaneously.

Response to Arguments

Applicants arguments and amendments were carefully considered and found persuasive. Accordingly new rejections are presented herein.

7. For reasons aforementioned, no claims are allowed.

8. Papers related to this application may be submitted to Group 1600 by facsimile transmission. The Group 1641 – Central Fax number is (571) 273-8300, which is able to receive transmissions 24 hours/day, 7 days/week.

In the event Applicant would like to fax an unofficial communication, the Examiner should be contacted for the appropriate Right Fax number. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lisa V. Cook whose telephone number is (571) 272-0816. The examiner can normally be reached on Monday - Friday from 7:00 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Shibuya, can be reached on (571) 272-0806.

Any inquiry of a general nature or relating to the status of this application should be directed to Group TC 1600 whose telephone number is (571) 272-1600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see httpr//pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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